MARSHALL STAR

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Dr. Paul McConnaughey of Marshall's Fluid Dynamics Analysis Branch discusses rocket engine pump impeller analyses and design concepts with Langley Research Center Director Dr. Jeremiah Creedon, left, and Langley's Director of Aerospace Transportation Technology Office, Delma Freeman, during a tour of the Center last week.

Atlantis Scheduled to Land Today at KSC

Space Shuttle Atlantis was scheduled to land this morning at 6:48 a.m. CST at Kennedy Space Center, concluding the STS-81 mission. Astronaut John Blaha is returning to Earth after four months aboard the Russian space station Mir while Astronaut Jerry Linenger, who was taken to Mir aboard Atlantis, begins his scheduled four-month stay in space.

Meanwhile, Shuttle Discovery was rolled out to the launch pad Friday in preparation for launch on mission STS-82 on Feb. 11. The rollout was interrupted for evaluation of a 24-foot long crack on the Mobile Launch Platform (MLP). Structural engineers have determined the integrity of the MLP has not been compromised.

Evidence Shows Gamma-Ray Bursts Come from Remote Parts of Universe

Last month, astrophysicists at the Marshall Center added a new intriguing twist to the already puzzling field of high-energy astronomy. Now, this month, they plan to add a helix to the twist that points to the confirmation of a long-held theory within the astronomical community.

Marshall scientists measured and analyzed the position of more than 1,700 gamma-ray bursts, brilliant flashes of high-energy particles of light, detected over the past five-and-a-half years.

...instead of mirroring the structure of the Milky Way on the sky, the positions of the bursts are almost perfectly random.

The results of the analysis strongly indicate that bursts originate billions of light years from the Earth and not from within the Milky Way Galaxy or the area just outside of it.

The Marshall Center astronomers measured and analyzed the bursts' positions using data from the Burst and Transient Source Experiment instrument aboard NASA's Earth-orbiting Compton Gamma Ray Observatory.

Experiment co-investigator and Marshall Space Sciences Laboratory astrophysicist Dr. Charles Meegan will present the results of the analysis at the 189th meeting of the American Astronomical Society in Toronto, Ontario, Canada last week.

"By taking a different approach to looking at how bursts are distributed on the sky and comparing the information to theories that place them just outside of our own Milky Way Galaxy, gamma-ray bursts are about 300 times more likely to come from the far edge of the universe than from our own Galaxy or the halo that surrounds it," said Meegan.

"Each year that the Burst and Transient Source Experiment instrument has been in operation, the evidence that bursts originate from remote distances has been mounting and the theory more widely accepted. But, this is the first time we've tried to estimate the probabilities of which theory is correct," said Meegan.

The experiment detects approximately one gamma-ray burst per day. If your eyes could see them, each burst might look like a giant flashbulb going off at a random time in a random position of the sky.

The instrument is able to determine, within a few degrees, the position of the burst on the sky. By looking at the positions of all the bursts, astronomers learn how the bursts are distributed in space.

"Take the band of the Milky Way, for example," said Meegan. "If you look up at a dark sky, you see most of the stars concentrated in a broad band across the sky. It's clearly not random; you're seeing the frisbee-like structure of our own

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Henke's Reflections on Procurement Years Include Changes

The ins and outs of the procurement process may not be as glamorous or exciting as some types of activity at a large, multifaceted organization such as the Marshall Center.

But, in terms of the functions that keep the Center "ticking," procurement is as critical as food or water to the human body.

For some firsthand anecdotal information that illustrates this point, one of the best sources you might turn to is Ed Henke, who this month wrapped up a 30-plus year career in the Procurement Office. During his career, he has not only been engaged in virtually all facets of the field, but has seen tremendous changes in how the procurement function is executed.

Last day at the office for procurement chief Henke

When Henke started in the Procurement Office over 30 years ago, there was one centralized, all-purpose computer used to do everything, from word processing to contract generation.

"Today, says Henke, "that's done electronically on each negotiator's desk."

" Having to physically send the contracts back and forth to be signed was a time consuming effort," explains Henke. "Now we can do it so fast — with fax machines and electronic mail."

Henke pointed out that such changes not only improved productivity but also brought a high level of flexibility.

The Procurement Office now can obtain requirements from an engineer and get them out on the street through an electronic system called the NASA Acquisition Information System. "The time span now for getting out a solicitation and receiving a response is about 15 days," Henke said. "Fifteen years ago, however, it would have taken 45 to 60 days. The difference in time is remarkable."

Even hiring new employees today illustrates the overall changes.

"When I came to Marshall, in order to be a contracting officer, you had to be a supervisor," explained Henke. "Now, there are team leaders who are contracting officers making decisions themselves. The overall benefit is, we've cut the lead time."

Remembering a time when one buyer would have hundreds of purchase orders stacked on the desk, Henke noted that "today, lead times for those same purchases have shortened because of using things like credit cards. That makes quite a difference, especially since the Procurement Office is down to around 130 people."

The future does hold challenges for procurement, though, Henke said. "The current organization of 130-plus will be

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Delta II Rocket Lost During Launch

At 10:28 a.m. CST Friday the U.S. Air Force launched a McDonnell Douglas-built Delta II rocket from Launch Complex 17-A at Cape Canaveral Air Station, Fla. An anomaly occurred approximately 12 seconds into powered flight. The vehicle self-destructed, then the flight control officer sent precautionary destruct functions at 21 seconds into flight when it ceased powered flight. Vehicle components fell into a cleared safety area in the Atlantic Ocean and onto the Air Station. No personnel were injured. No estimate on the damage is available yet, and an investigation is underway to determine the cause of the mishap.

The next planned launch of a Delta II rocket from Vandenberg Air Force Base, which had been planned for this week, will be postponed until the investigation is complete.

Gamma-Ray Bursts

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Galaxy from a position inside the disk.

"For over 15 years, we thought that we'd see a similar distribution from the gamma-ray bursts, especially the weak ones, because we thought the bursts were in our Galaxy," said Meegan.

However, instead of mirroring the structure of the Milky Way on the sky, the positions of the bursts are almost perfectly random.

This random distribution, combined with the observation of very few dim bursts, makes the distribution of gamma-ray bursts unlike that of any known objects in the Galaxy.

"We think the data are telling us that the bursts are literally billions of light years away, coming from the most remote parts of the universe, at what we call cosmological distances," said Dr. Gerald Fishman, experiment principal investigator.

"When you look at the distribution of the data this way, it's the most compelling piece of evidence yet indicating bursts come from the edge of the universe," said Meegan.

The bursts have been collected over a time span of more than five-and-a-half years since the instrument was launched from the Space Shuttle Atlantis in April 1991.

Implementing the Strategic Plan: An MSFC Profile

All Marshall employees have been provided with a copy of the NASA Strategic Plan, along with the Marshall Center's implementation document. The implementation plan, to be updated annually, explains how we at Marshall plan to carry out the NASA Agency and Enterprise strategies. Center Director Dr. Wayne Littles has stressed the importance of each employee reading the plan and understanding what it means regarding how his or her work supports NASA's goal and missions. To facilitate that understanding, the Star is presenting several examples of how selected individuals fit into the plan's structure.

MARGOT THIGPEN

Occupational specialty: Executive Secretary. MSFC/Organization assignment and activity: Reusable Launch Vehicle, Space Transportation Division.

• **NASA enterprises supported:** Human Exploration and Development of Space; Space Science Enterprise; Aeronautics and Space Transportation Technology.

• **Where I fit and what it means to me:**

"Since my job is in the area of Programmatic Assignments, I'm involved in some way with three enterprise areas. My role in support of the Human Exploration and Development of Space (HEDS) Enterprise is to increase communitiy awareness and educate others about the MSFC role in space exploration and the goals we have set for the future.

In the Space Science Enterprise (SSE), I feel it's very important to promote the involvement of women in the scientific work force. Being involved in the NASA space programs has played a very important part of my career. It has made me feel that everyone should be able to share the excitement as we identify and support the development of promising new technologies.

In the Aeronautics and Space Transportation Technology (ASTT) Enterprise I have a direct role in our partnership with the space launch industry. Working in the RLV program we have developed an industry/Government team working toward the development and operation of a next generation space transportation system. I strive everyday in my day-to-day routine to bring new awareness of our space technologies to all in the private sector."

• **Reaction to the strategic planning process:**

"I have to admit that I had to read the plan more than once. As I read the plan's goals and objectives I realized I am an active and important player on the MSFC team. The Plan helped me recognize the importance of my role and responsibilities as we develop new technologies in our space program."

Henke Reflects

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losing 10 per cent of its people," Henke says. "Our manpower is heavily involved in the new programs that are important to the center."

Henke projects future changes for the procurement office will be due to NASA's new aproach to systems acquisition.

"Cooperative agreements five years ago were not reality," says Henke. "But look at the agreement that we now have involving UAH and the Global Hydrology and Climate Center." We enter partnerships now with contractors such as the cooperative agreement involving the the X-33. "The object of the exercise is to jointly demonstrate the technology and get it to a point where the contractor can pick it up and commercialize it. Our contribution to that program was around one billion dollars. That," says Henke, "puts a different face on the acquisition process."

Henke's experiences over the years not only highlight great changes, but also are the basis for reflection from a personal viewpoint.

"I've been privileged to work through an era that has seen technology develop from old vacuum tube computers that took rooms to house to witnessing a rocket engine being fired by using a laptop. I'll never forget things like hearing one of the Saturn stages fire (I was driving a 1956 Chevrolet and I thought that all four tires had blown!); sitting in my living room and seeing man step out on the moon; witnessing the technicians work with Skylab; they were exciting times. We've moved on through that era into using the complex piece of machinery (the Shuttle) that we fly today. It's been a wonderful time."

"The Procurement Office has definitely moved forward," says Henke. "Times change and people change. What we have accomplished is fantastic."

Henke sums it up as a wonderfully rewarding career. As he enters retirement, he is now spending more time with his family, especially with his grandchildren, on his farm in Cullman.

Employee Ads

Miscellaneous

★ MTD 5HP leaf and limb shredder/chipper, $250 negotiable. 233-4680
★ Fifth wheel hutch, steel toolbox with chrome lids, vented tailgate, towing mirrors fit '90-97 Chev/GMC. 881-9094
★ Heat pump, outside unit (compressor, etc.) for 3-ton system. Also other heat pump parts. 534-4968
★ Stylewriter II black and white printer, $125. 464-0414
★ Black shell for short wheel base Chevy pickup, fiberglass $100. 498-2116
★ ProSport Fitness stepper/climber, 5-function electronics, $100. 852-4092
★ 1987 Dynatrak fish and ski boat, fully equipped, $6,500; AKC female Dalmatian to good home, 2 years old, $150. 734-8649
★ Bunkbed, twin, upper, full, lower with mattress, $250; wood breakfast, table, bench 4 chair, $250. 721-9588/771-0880
★ 1974 World Book, $50; Childcraft, $30. 837-2386
★ Matching sofa, loveseat, chair, dark blue, $300. 533-1816
★ Two Gas Heaters, upright floor model, $45 each; 60 gallon water heater, $40. 539-1693

Vehicles

★ 1992 Firebird, red, t-tops, automatic, 73K miles, $11,500. 533-1506
★ 1989 Ford Bronco II, two wheel drive, new transmission, AC, $3850. 464-0414
★ 1989 Ford Taurus wagon, AC, power windows/locks, hitch, rebuilt transmission, cruise, $3,200. 881-0551
★ 1994 DeVille, white diamond, leather, heated seats, chrome wheels, 48K miles, $19,900. 534-2302
★ 1963 International pickup, straight shift, six cylinder, $900 o.b.o. 586-4831
★ 1991 Mazda RX-7 coupe, 54K miles, sunroof, alloys, security, $9,350. 881-0645
★ 1994 F250 club cab XLT, 5-speed, elec. brakes, towing package, 88K miles, $13,500. 232-1332
★ 1992 Astro van, 4WD, anti-lock brakes, dual air, all options, $12,400. 837-6109
★ 1990 Buick Riviera, red, V6, CD player, 79K miles, $8,500. 881-2601

Wanted

★ Hamster equipment: modular cages, tubes, wheels, water bottles, etc., sets or pieces. 233-4680
★ Dining room suite, cherry or mahogany. 883-2757

Found

★ Hewlett-Packard scientific calculator in 4203 north parking lot Jan. 10. Contact Lanny Upton at 4-6590

Center Announcements

☛ ***Thank You Marshall Employees*** **—** The Alabama Music Hall of Fame wishes to thank the employees of the Marshall Center for their assistance. Marshall volunteers worked the entrance to the dinner and helped the dinner guests find their tables. This year's event was much more professionally handled than last year's, thanks to all those who volunteered. The response was very gratifying and showed that Marshall employees are a real asset when asked to assist with community events.

☛ ***Almanacs*** **—** The Marshall Engineers and Scientists Association (MESA) is taking orders for the 1997 Federal Employees Almanac. The Almanac is a complete up-to-date reference book for federal employees. The almanacs are $9 ($8 for members). Call MESA at 4-7501 to place your order.

☛ ***MARS Valentine Dance*** **—** Tickets for the Feb. 15 Valentine Dance are now on sale by the MARS Ballroom Dance Club. The semi-formal dance will be held in the VBCC West Hall and will feature ballroom music by the Little Big Band. Socializing will begin at 6:30 p.m., and a buffet dinner will be served at 7, followed by dancing from 8 to 11:30 p.m. Tickets are $18 per person with a $3 discount for members. Tickets may be purchased from Tamara Landers (4-6818); Pat Sage (4-5427); Ron Brock (4-0768); Ed Ogozalek (837-1486); and Bob Williams (4-3998). Reservations for a table for eight can be made by calling Landers.

☛ ***MESA Meeting*** **—** The January meeting of the Marshall engineers and Scientists Association (MESA), IFPTE Local 27 will be held tomorrow at 11:30 a.m. in the MESA Office, Room C-105, in Building 4471. Refreshments will be served and all members are invited.

☛ ***Toastmasters International*** **—** Toastmasters International will have a lunch meeting each Tuesday from 11:30 a.m. to 12:30 p.m. in Building 4610 cafeteria conference room.

☛ ***CVPS Seminar*** **—**Visual Information Systems, Sun Microsystems, and Coleman Research will present a free seminar on Collaborative Virtual Prototyping (CVPS) on Jan. 28 at the Huntsville Marriott. CVPS is redefining system engineering and development by potentially offering an order of magnitude reduction in time and cost required for concept definition, technology insertion and reverse engineering requirements. Fore more information and to register, call Vista Information Systems at 726-4718

35 Years Ago…

In Jan. 1962, NASA approved the Saturn V development program and authorized Marshall Space Flight Center to direct its development. The 7.5 million pound thrust Saturn V rocket made possible the first moon walk in 1969.

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